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NEWSLETTER OF THE LONDON CHAPTER,
ONTARIO ARCHAEOLOGICAL SOCIETY
Grosvenor Lodge, 1017 Western Road, London, ON. N6G 1G5
(519) 645-2844

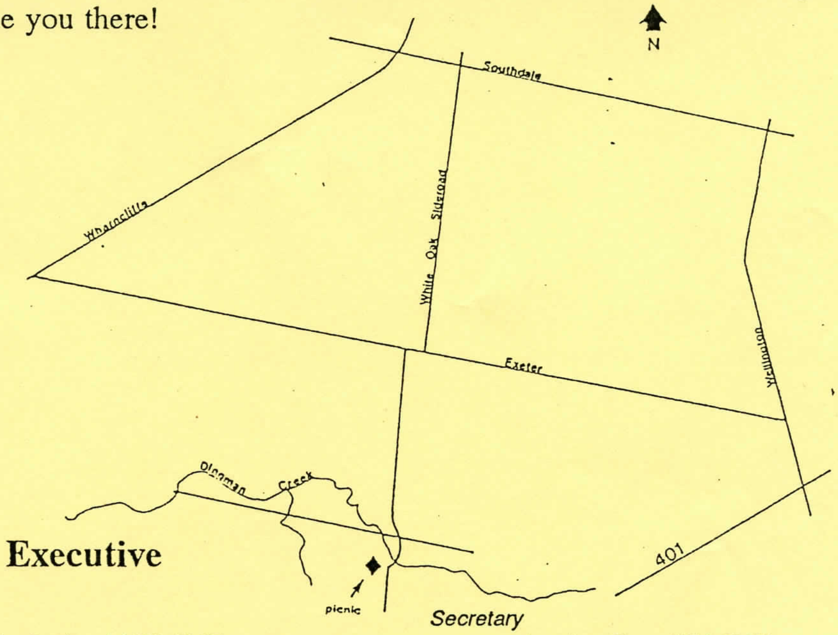
LONDON CHAPTER OAS

August, 1993 93-4

Annual London Chapter Summer Picnic

Saturday, August 7th, 3 PM
4563 White Oaks Road, South London

Its that time of year again, when we can get together and find out what's been happening since the start of the field season, toss a few atlatls, eat dogs, burgs, salads and other stuff, and generally relax for an afternoon. We'll bring the burgs and dogs, you bring the salads, desserts and stuff. The Picnic's at Raymond Crinklaw's, and he's got a big spread, so bring out a lawn chair, the atlatl, baseball glove and ball, and crocket set. For more information on what to bring, call Harri (672-6523). Hope to see you there!



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EXECUTIVE REPORT

The summer tends to speed everything up in the field, but slow everything down in the office, so it's all quiet on the Home Office front. The only thing happening is that the Prehistory volume should be going to press by the end of August or early September. The second edition will only feature typo corrections, but it'll be a must for anyone who hates typos!!

Please note the fall symposium flyer at the back of this issue of **KEWA**. We still need volunteers to help out during the conference, so please let us know if you can assist.

Speaker Night: Your ever efficient speaker night organizing committee has already lined up our September speaker. On Thursday, September 9th, at 8 PM come on out to Grosvenor Lodge to hear *Bill Fitzgerald* talk on the work he's been doing on an island in the mouth of the St. Lawrence, recovering material from a 16th century whaling station, along with a host of other early historic and prehistoric occupations.

HAAGSMA SITE EXCAVATION: Dave Riddell is continuing his work on this Late Woodland site. Excavations to date have uncovered a longhouse and associated features. Volunteers are needed for the rest of the summer, and in to the fall. The site is located near Alviston, just a half hour drive west of London. So if you'd like to come out, please call Dave at 1-847-5731.

SOCIAL REPORT

Speaking of fieldwork, Saturday, August 14th is the day we plan to finish off the Grosvenor Lodge survey. Anyone who can spare a few hours test pitting that day would be most appreciated. Work will start at 10 AM. For more information contact Pat at 438-4817.

There's a chance we can again offer Lab Nights this fall. At least one Middle Iroquoian collection is available for processing. Anyone else interested in providing a collection or two? Anyone interested in coming out for Lab nights to work on collections, conduct a research project, or get a chance to learn some lab and studio skills? No night of the week has been set yet, but if you're interested give Neal Ferris a call at 433-8401.

Finally, a big **CONGRATULATIONS** to a couple of Chris's. Christine White recently brought in to the world a healthy baby girl, named Caelen. Chapter volunteers are available for baby-sitting duty as needed! And Chris Ellis was recently given tenure, promoted to associate professor and made chair of the Department of Anthropology at the University of Western Ontario, all on the same day! Outside of insisting that everyone now call him "Your Excellency", Chris assures us that his stellar climb up the career ladder isn't going to his head!

EDITOR'S REPORT

This month we provide you with an article from the offices of Archaeological Services Inc., showing once again the range of information CRM archaeologists are generating. As well, we have a short article from the OAS Executive-Director. Charlie reviews some interesting findings he has made on an iron axe, which fits nicely with earlier work published in this newsletter by Bill Fitzgerald and Ian and Tom Kenyon.

THE TANJO SITE (AhGx-97): A LATE ARCHAIC COMPONENT IN HAMILTON-WENTWORTH

Catherine Vanderburgh Kerr and Ronald F. Williamson

INTRODUCTION

In the fall of 1986, *Archaeological Services Inc.* carried out an archaeological assessment of part of Lot 21, Concession 8, in the former Township of Barton, Wentworth County, now within the City of Hamilton in the Regional Municipality of Hamilton-Wentworth. During the survey, several significant archaeological sites were discovered (Figure 1), including the early to mid-nineteenth century Euro-Canadian Lampman site (AhGx-96), the Early Iroquoian Clish site (AhGx-95), the Garner site (AhGx-98), the Tanjo site (AhGx-97) and the Corrado site (AhGx-94) (*Archaeological Services Inc.* 1986). The Garner site, a small, probable Archaic component, consisted of a light scatter of cultural material including one biface, one scraper and eight flakes. The Corrado site, on the other hand, consisted of a large, dense scatter of lithic material covering an area of approximately 2400 square metres. The site would appear to have been occupied during the Early, Middle and Late Archaic periods (*Archaeological Services Inc.* 1992b; Welsh et al. 1992). While more intensive investigations were subsequently carried out at all of the sites discovered during the assessment, the following discussion will be confined to a summary of the finds from Tanjo.

ENVIRONMENTAL SETTING

The site is situated on the northwest edge of the Haldimand Clay Plain on the Niagara Escarpment. Although this area was submerged by glacial Lake Warren, not all of the till is buried by the stratified clay. Till moraine appears at the surface on low morainic ridges present in the northern part of the Plain (Chapman and Putnam 1984). The general area is one of rolling topography, formed by numerous knolls and traversed by many small streams, the majority of which are seasonal. Several permanent tributaries of Ancaster Creek also flow through the area. These tributaries form part of the larger Tiffany-Ancaster-Coldwater-Spencer Creek watershed that empties into the marshes of Cootes Paradise, at the extreme western end of Lake Ontario.

The many streams in the general vicinity of the site are associated with numerous wetland complexes of varying sizes. One of these wetland complexes, lying approximately one kilometre southwest of the Tanjo site, is known as the *Ancaster Creek Headwaters* Environmentally Sensitive Area #23 for the Regional Municipality of Hamilton-Wentworth. The area contains a variety of vegetation communities, including mixed upland and lowland hardwoods, shrublands, and a stream valley/meadowland complex, and currently supports considerable populations of common species of reptiles, amphibians, birds, and mammals, as well as more rare, provincially significant animal species. Furthermore, over 160 plant species have been documented in the study area, including several that are either regionally significant or nationally rare (*Ecoplans Ltd* 1990).

These diverse and rich habitats, which characterize the general area today, suggest that it would have provided an attractive and bountiful resource base for local human inhabitants during both historic and prehistoric times. This assumption is largely confirmed by the considerable number of other archaeological sites (119 sites and 93 findspots) that have been recorded in the immediate vicinity of the subject property (Welsh et al. 1992).

The Tanjo site was situated on a ridge which sloped approximately 50 metres southwest to a small stream. Based on bank morphology, the stream may have been of substantial size during prehistoric times and indeed, the presence of several other prehistoric sites nearby supports the notion of a constant and dependable water source.

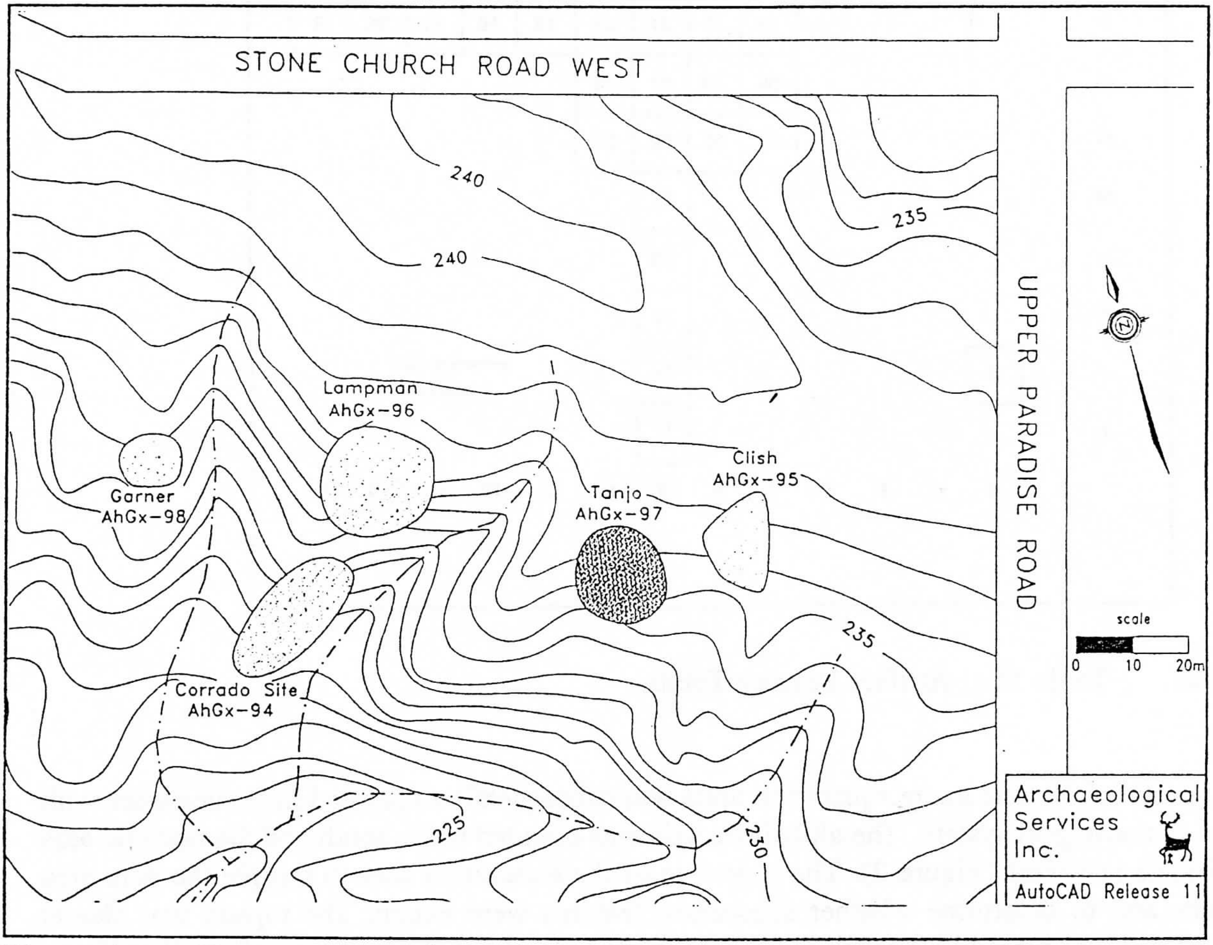

Figure 1: Topographic Setting and Areal Extent of the Tanjo Site.

ARCHAEOLOGICAL FIELD INVESTIGATIONS

The Tanjo site was a diffuse surface scatter, covering an area of approximately 2000 square metres. A controlled systematic surface collection yielded four primary flakes, eleven secondary flakes, twelve secondary flake fragments, one piece of shatter, four utilized flakes, one scraper, and one Late Archaic projectile point (*Archaeological Services Inc.* 1992a).

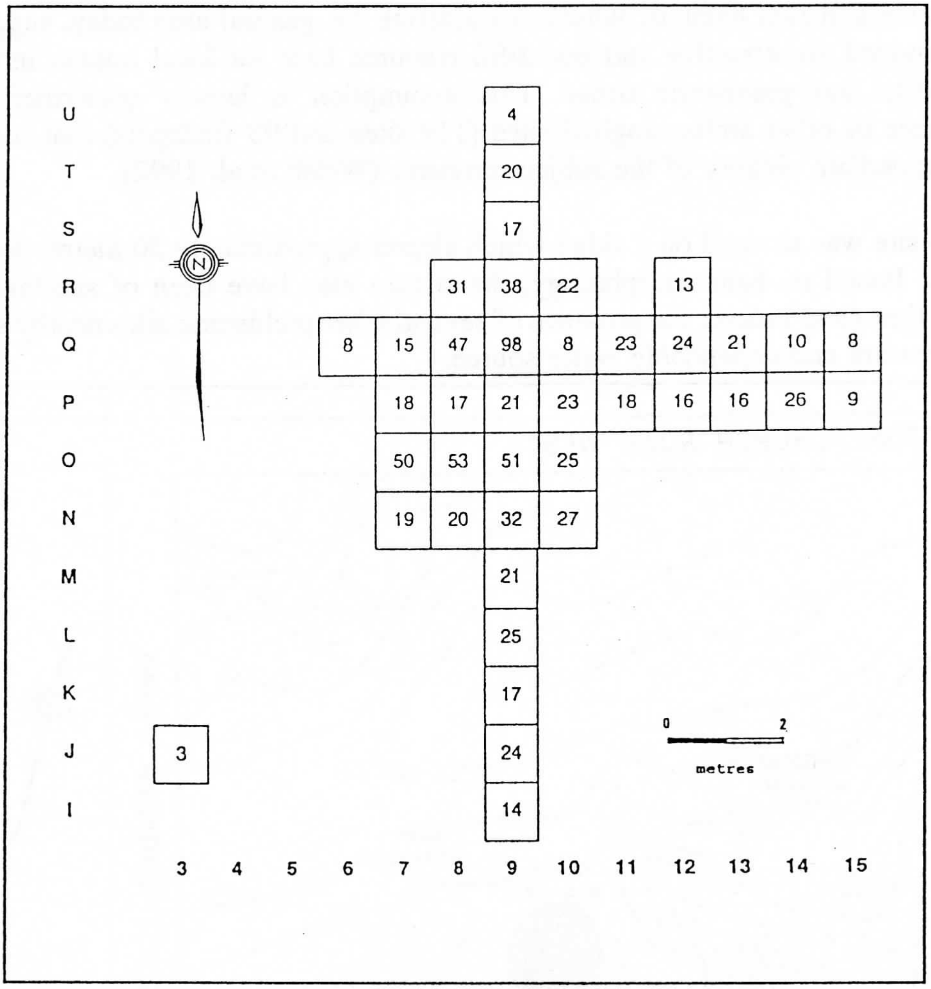

Figure 2: Tanjo Site: Artifact Density Totals.

A total of 40, one metre square test units was subsequently excavated in concordance with an alpha-numeric grid system. The alphabetic axis was oriented north-south and the numeric axis was oriented east-west (Figure 2). The objective of the excavation was to sample the core area of the site and to determine whether subsurface features were extant. The topsoil was shovel excavated and was screened through 6mm wire mesh to facilitate the recovery of small artifacts. The topsoil consisted of a clay-loam and was 10 to 20cm in depth. In total, 963 lithic artifacts were recovered and analyzed (Table 1). No subsurface features were documented.

Figures 2 and 3 show that the majority of artifacts was found in one large cluster, possibly comprising two smaller sub-clusters. The first sub-cluster includes squares Q8, Q9, R8, and R9 and the second sub-cluster, squares N9, N10, O7, O8, O9, O10, and P10.

TABLE 1: NUMERICAL AND PERCENTAGE FREQUENCY OF LITHIC CLASSES

	Frequency	Percentage
Projectile Points	1	0.1
Bifaces	1	0.1
Scrapers	37	3.8
Utilized Flakes	27	2.8
Informal Perforators	6	0.6
Cores/fragments	1	0.1
Primary Flakes	36	3.7
Secondary Flakes	353	36.7
Shatter	503	52.2
TOTALS	**963**	**100.1**

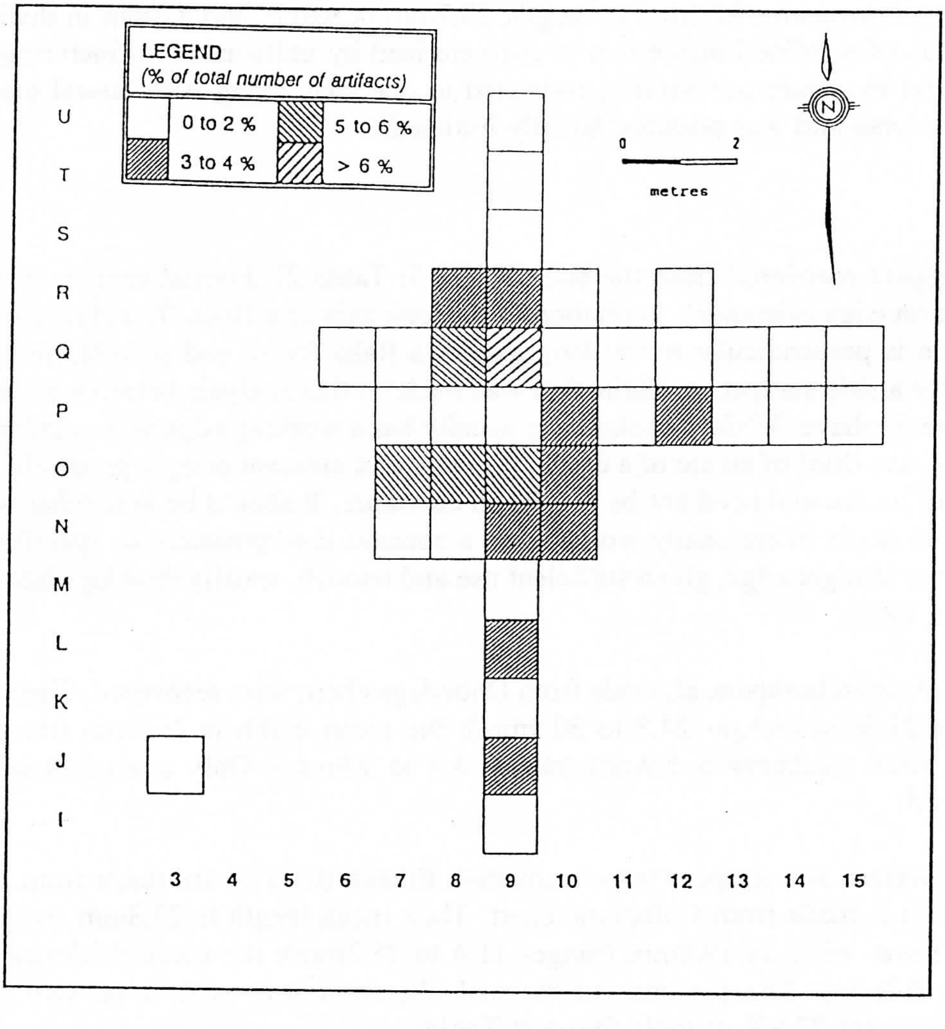

Figure 3: Tanjo Site: Percentage Distribution of Artifacts.

ARTIFACT ANALYSIS

Projectile Points

Only one projectile point (Figure 4a) was recovered from the site. The point was not found within the surface scatter, but twenty metres to the northwest. Nevertheless, it is probable that it is associated with the scatter. The projectile point is a poorly-knapped, thermally altered specimen manufactured from Haldimand chert. It appears to date to the Small Point Terminal Archaic period (ca. 3000 B.P. to 2500 B.P.) although it is not possible to identify its exact type (Ellis et al. 1990: 106-109). It has a length of 30mm, a width of 16mm, and a thickness of 8mm. The width and the height of the notch are 3mm and 6mm respectively, while the basal width is 12mm. The minimum width of the hafting element is 11mm.

Bifaces

Only one biface fragment (Figure 4b was found. It was situated in Unit Q8. Manufactured from Onondaga chert, it measures 22.2mm in length, 27.7mm in width, and 8.3mm in thickness. It is the basal portion of a refined biface that is characterized by unifacial step fracturing along the basal margin and moderate use-retouch, restricted to one face, along both lateral margins. The fracture is transverse and was possibly facially initiated.

Scrapers

In total 34 scrapers recovered from the site (Figure 5; Table 2). Formal scraper nomenclature usually centres on edge orientation in relation to the long axis of a flake. Thus the usual working edge orientation is perpendicular to the long axis of a flake for an end scraper, and parallel to the long axis for a side scraper. A distinction was made in this analysis between a crescent side scraper and a spokeshave. While a spokeshave usually has a working edge with regular curvature forming at least one-third of an arc of a circle, the edge of a crescent scraper generally forms less that one-third of an arc and need not be regular in curvature. It should be noted that while some scrapers were no doubt intentionally worked into a concave configuration for specific purposes, the outline of any straight edge, given sufficient use and retouch, usually develops into a concave shape (Thomas 1992).

Endscrapers : Four endscrapers, all made from Onondaga chert, were recovered. Their calculated mean length is 27.3mm (range- 24.8 to 30.9mm); the mean width is 26.7mm (range- 14.4 to 22.2mm); the mean thickness is 5.9mm (range- 3.9 to 9.9mm). Only one of these had been thermally altered.

Sidescrapers: Sixteen sidescrapers were recovered. Fifteen (93.8%) are made from Onondaga, while one (6.3%) is made from Colbourne chert. Their mean length is 23.8mm (range- 17.1 to 32.1mm); the mean width is 19.8mm (range- 11.4 to 28.2mm); the mean thickness is 4.2mm (range- 2.4 to 6.2mm). The presence of thermal alteration was evident on two specimens. Sidescrapers represent 22.9% of tools found at Tanjo.

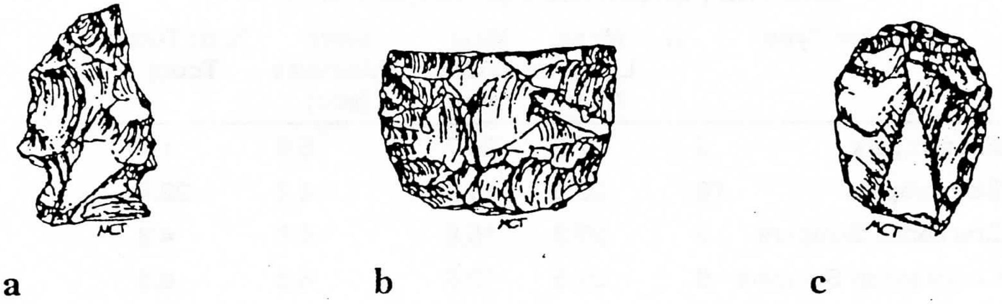

Figure 4: Artifacts From the Tanjo Site. a- projectile point; b- biface fragment; c- combination scraper. Artifacts are depicted at actual size.

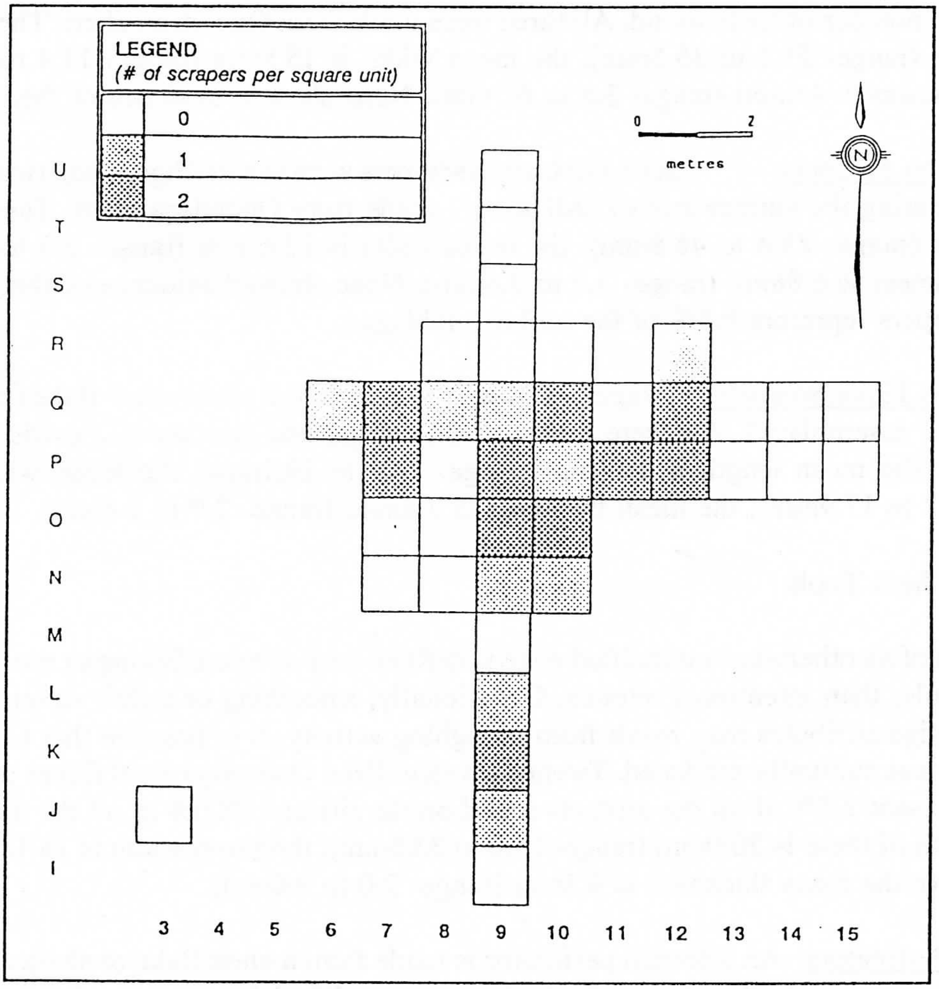

Figure 5: Tanjo Site: Location of Scrapers.

TABLE 2: MEAN DESCRIPTIVE ATTRIBUTE VALUES OF SCRAPERS AND THE PERCENTAGE OF TOTAL TOOLS

Scraper Type	n	Mean Length (mm)	Mean Width (mm)	Mean Thickness (mm)	% of Total Tools
Endscrapers	4	27.3	26.7	5.9	1.4
Sidescrapers	16	23.8	19.8	4.2	22.9
Crescentic Scrapers	3	27.3	15.8	4.6	4.3
Combination Scrapers	6	31.8	12.6	6.8	8.6
Amorphous Flake Scrapers	6	16.1	15.2	3.4	8.6
TOTAL					**45.8**

Crescent Scrapers: There were three crescentic scrapers recovered at Tanjo representing 4.3% of the total number of tools found. All three were made from Onondaga chert. Their mean length is 27.3mm (range- 21.1 to 35.5mm); the mean width is 15.8mm (range- 14.4 to 18.2mm); the mean thickness is 4.6mm (range- 3.5 to 6.2mm). None showed evidence of thermal alteration.

Combination Scrapers: Six combination scrapers were found (Figure 4c), two of which were collected during the surface survey. All six are made from Onondaga chert. Their mean length is 31.8mm (range- 23.4 to 46.8mm); the mean width is 12.6 mm (range- 2.3 to 29.0mm); the mean thickness is 6.8mm, (range- 3.9 to 9.4mm). None showed evidence of thermal alteration. These scrapers represent 8.5% of the tool assemblage.

Amorphous Flake Scrapers: Scrapers were also fashioned out of six small flake fragments (8.6% of the total assemblage). All were made of Onondaga, and one showed evidence of thermal alteration. The mean length is 16.1mm (range- 13.9 to 19.1mm); the mean width is 15.2mm (range-10.3 to 17.9mm); the mean thickness is 3.4mm, (range- 2.9 to 3.8mm).

Utilized Chert Tools

Utilization of an otherwise unmodified edge is defined here as microflaking or use retouch, which is less regular than intentional retouch. Occasionally, smoothing or polish develops. As similar forms of edge attributes may result from ploughing activity, it is possible that not all identified utilization was culturally produced. Twenty-seven utilized Onondaga chert flakes were recovered. These represent 2.8% of all the artifacts found on the site and 38.6% of all the tools found. The mean length of these is 20.0mm (range- 13.0 to 33.5mm); the mean width is 18.1mm (range- 7.6 to 23.2mm); the mean thickness is 4.3mm (range- 2.0 to 9.0mm).

Informal Perforators: An informal perforator is made from a chert flake or shatter fragment with a sharp, natural point, the shape of which is not modified by intentional retouch. Use wear micro-flaking on opposing sides of the point near the tip, the diagnostic characteristic of the informal perforator, is thought to have formed in consequence of rotation during penetration of a medium such as hide or wood.

Six informal perforators were identified in the Tanjo collection, all of Onondaga chert. The mean length of these is 31.0mm (range- 26.3 to 44.0mm); the mean width is 17.5mm (range- 3.0 to 31.9mm); the mean thickness is 8.2mm (range- 4.6 to 15.0mm). These make up 8.6% of all the tools found. One of these showed evidence of thermal alteration.

Debitage

For the purposes of this analysis, subjective assessments of flake types were made on complete and proximal flake fragments. Primary flakes, thought to be characteristic of the initial stages of lithic reduction, are larger and have thicker, chunkier cross-sections than in comparison to secondary flakes. Primary flakes tend to have fewer dorsal scars per unit area and the dorsal scars tend to be deeper and more randomly oriented. Striking platforms tend to have less faceting and more preparation and there is a significant number of specimens with dorsal cortex.

Secondary flakes, on the other hand, are considered to be characteristic of the final stages in lithic reduction (eg. final stages of tool production and implement refurbishing). Secondary flakes are smaller, have thinner, more lenticular cross-sections, and the flake scars on the dorsal surface have a tendency to be aligned at right angles to the striking platform. Striking platforms of secondary flakes tend to have more facets per unit area, and secondary flakes normally have little cortex on their dorsal surfaces.

Both primary and secondary flakes were evenly distributed on the Tanjo site, in a manner consistent with the main artifact cluster, and indeed also reflecting the two smaller sub-clusters.

Primary Flakes: Thirty-six primary flakes were recovered, all having been manufactured from Onondaga chert. Six exhibited cortex and fourteen (39%) were modified into tools: three side scrapers, three combination scrapers, three possible perforators, and five utilized flakes.

Secondary Flakes: A total of 353 secondary flakes was recovered, representing 40.4% of the entire assemblage. Cortex was present on approximately twelve pieces, the majority of which were Onondaga chert. Trace amounts of other cherts -- including Trent, Collingwood and Colbourne cherts -- accounted for 1.3% of all secondary flakes. In total, forty-eight pieces exhibited evidence of retouch. More significantly, 25.9% of the secondary flakes were found to have been thermally altered, possibly indicating a correlation between proximity to hearth areas and these reduction activities.

Shatter: Our definition of shatter follows Bucy (1974:18): "small angular fragments which show no bulbs of force or other readily discernible characteristics of flaking. Also included are flake fragments which have no diagnostic value..." For our purpose here, all flake fragments lacking a striking platform were combined into this category.

Shatter represents 52.2% of the entire assemblage, with a total of 503 pieces. Onondaga chert was most predominant, but trace amounts of Flint Ridge and Trent cherts accounted for 1.2%. Evidence of thermal alteration was noted for 12.1% of the shatter.

Cores

One possible core made from Onondaga was recovered.

Thermal Alteration

One hundred and thirteen of the recovered artifacts (17.1% of the assemblage) were thermally altered. The term "thermal alteration" refers to both intentional and accidental high temperature alteration of a lithic material. Traits used in the identification of thermal alteration include: pot lid fractures in the form of a "plano-convex flake leaving a concave scar" (Crabtree 1972:84); a complex crinkled, angular fracture pattern which may equate to Fitting's "block fracture" pattern (Fitting et al 1966:24); and in the most extreme cases, vitrification. Colour and textural changes may represent more subtle results of exposure to heat (Thomas 1992:36-37).

Most of the thermally altered material was found in those units that were immediately adjacent to the smaller sub-cluster within the overall artifact distribution (Q8, Q9, R8 and R9) (Figure 6), suggesting the former presence of a hearth in this area.

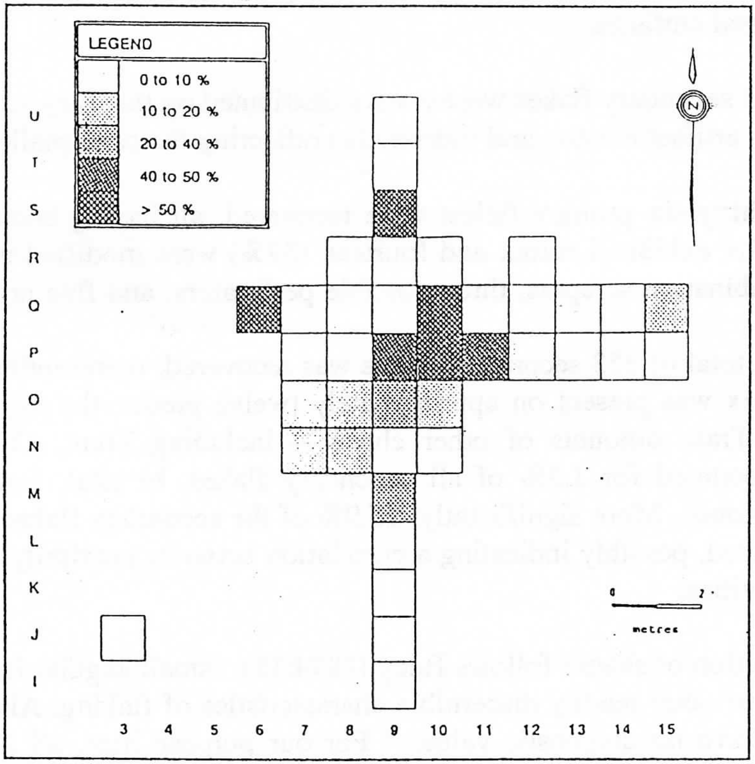

Figure 6: Tanjo Site: Percentage of Thermally Altered Materials.

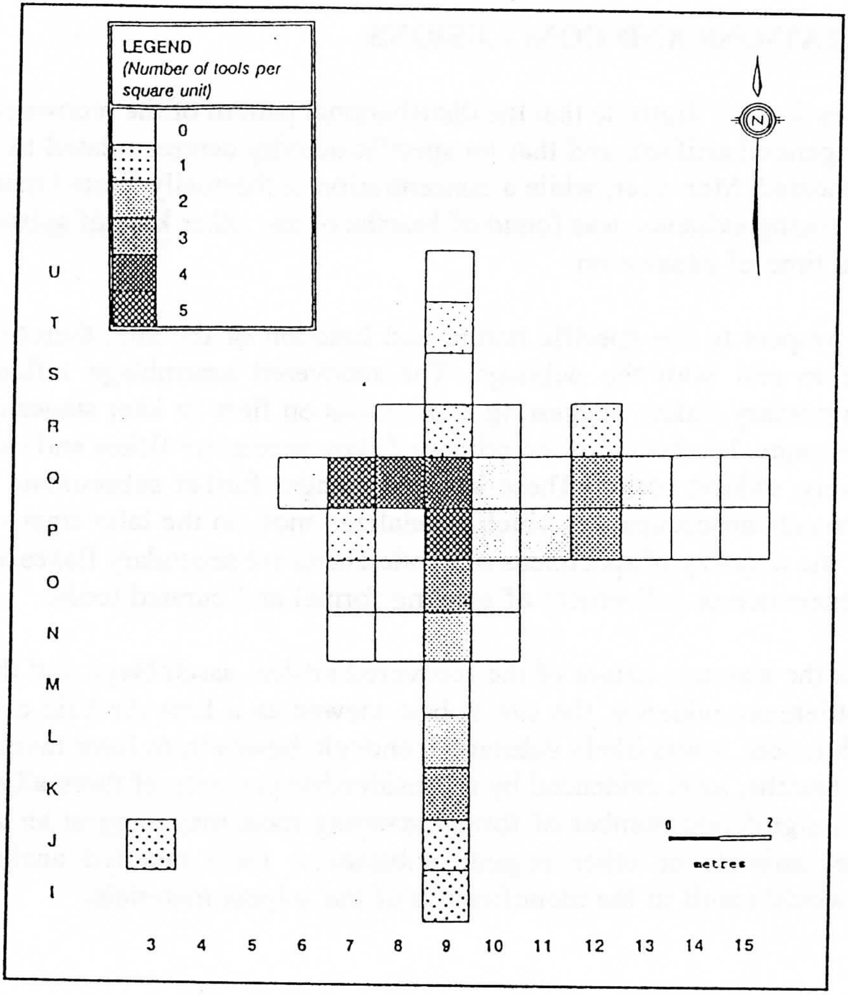

Figure 7: The Tanjo Site: Total Tool Densities.

Chert Types

A variety of chert types was visually identified including Onondaga, Flint Ridge, Collingwood, Colbourne, Trent/Mercer and Ancaster cherts. There were 950 pieces (98.8%) of Onondaga chert, 5 pieces (0.52%) of Flint Ridge chert, 3 pieces (0.31%) of Trent/Mercer chert, 2 pieces (0.21%) of Colbourne chert, 2 pieces (0.21%) of Collingwood chert and one piece (0.1%) of Haldimand chert. Although Onondaga chert is obviously the most dominant chert type, only Haldimand chert was available locally. The projectile point was the only tool manufactured from Haldimand chert. None of the recovered tools were made from the exotic cherts. Indeed, the small amount of Flint Ridge, Colbourne, Collingwood and Mercer or Trent cherts would suggest the maintenance of formal, curated tools manufactured from exotic cherts. Conversely, Onondaga chert appears to have been used for expedient tool manufacture.

INTERPRETATIONS AND CONCLUSIONS

Figures 5 and 7 illustrate that the distributional pattern of the recovered tools is consistent with that for general artifacts and that no specific activity centres related to the recovered tools could be delineated. Moreover, while a concentration of thermally altered material was noted, no other substantiating evidence was found of hearths or any other kind of subsurface feature in the subsoil at the time of excavation.

With respect to the specific nature and function of the site, therefore, the most useful clues appear to rest with the debitage. The recovered assemblage reflects a 10:1 ratio of secondary to primary flakes, suggesting a site focus on finer or later stages of tool manufacture and/or maintenance. Moreover, of the primary flakes, secondary flakes and shatter, 15%, 3%, and 0% respectively, exhibit cortex. These low percentages further substantiate the hypothesis that this site represents an occupation which specialized more in the later stages of lithic reduction. The fact that the majority of specimens of exotic cherts are secondary flakes and shatter may also indicate maintenance or refinement of existing formal and curated tools.

Given the size and nature of the recovered artifact assemblage and the lack of structural and other settlement evidence, the site is best viewed as a Late Archaic campsite of unknown season and duration. It was likely substantial enough, however, to have involved the presence of one or more hearths, as is evidenced by a considerable presence of thermally altered debris. The recovery of a significant number of formal scraping tools may suggest an association with the processing of animals or other organic substances. Only detailed analysis of the scraper assemblage would result in the identification of the subject materials.

ACKNOWLEDGEMENTS

Our gratitude is extended to Dr. Martha Latta, of the University of Toronto, and Mr. Stephen Cox Thomas, of *Archaeological Services Inc.* who provided assistance to the senior author in her initial analysis of the lithic material from the site; and to Ms. Monicke Thibeault of *Archaeological Services Inc.*, who produced the artifact illustrations. The uncommon chert types in the collection were identified by William A. Fox. We are also grateful to David Robertson for his editorial assistance.

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A POSSIBLE "UPSET" IRON TRADE AXE

Charles Garrad

In the language of the blacksmith to "upset" is to shorten. An "upset" iron trade axe would usually be one that has been shortened by a smith to create a new cutting edge when the original was damaged beyond other methods of repair.

The process of making a seventeenth century iron trade axe has been described in **KEWA** (Kenyon 1987) and elsewhere (e.g. Chandler 1965). A flat iron bar was heated and bent over upon itself. The two ends were joined together and shaped into a blade. The presence of the resulting joint seam through the blade and the softness of the iron used resulted in an edge which rapidly dulled in use. Sometimes, but not very often judging from the numbers of iron trade axes found with a damaged cutting edge, the use-life of the axe was lengthened by inserting a steel piece into the cutting edge. This was called "laying on an axe".

If the cutting edge was damaged beyond the ability of the user to repair by filing or grinding, the axe might be repaired by a blacksmith. The axe could be opened at the laminated seam and a new steel piece inserted. An axe repaired this way was "new layed". If the damage was too severe for this treatment, or if a new steel insert was not available, the smith could restore some utility to the axe by cutting away the damage and reforging a new edge. This process shortened or "upset" the axe.

An iron trade axe of the period "was a simple object that any blacksmith could make in a short time". The "shortening (upsetting), or otherwise repairing" of axes was routine work. Any competent blacksmith could "new-lay" or "upset" an iron axe to restore its usability. The cost of "upsetting" an axe to repair it was in later times about a fifth of the price of a new axe (Peterson 1965:18, Woodward 1946:8-9).

Being hand-wrought, and possibly from random-dimensioned stock, no two iron trade axes are precisely identical. Nevertheless, measurement of a number of complete axes indicates that the maximum width (inherently at the cutting edge of the blade) divided by overall length (Q/B using the measuring system developed by Ian and Thomas Kenyon [1987: 12]) is usually about 0.5. Thirteen axes from the historic Petun Plater-Martin (BdHb-1) site have an actual or projected width/length (Q/B) calculation range from 0.44 to 0.544, a mean of 0.49 and an average of 0.48. Forty-one other Petun area iron axes have a Q/B range 0.445-0.56, a mean of 0.505, and average 0.52. It is presumed that a Q/B figure higher than 0.56 indicates distortion by intentional modification.

An "upset" or shortened axe should logically be recognisable by two criteria:

1) its visibly unusual shortness and distorted appearance, confirmed by a width/length calculation outside the usual range (higher than 0.56);

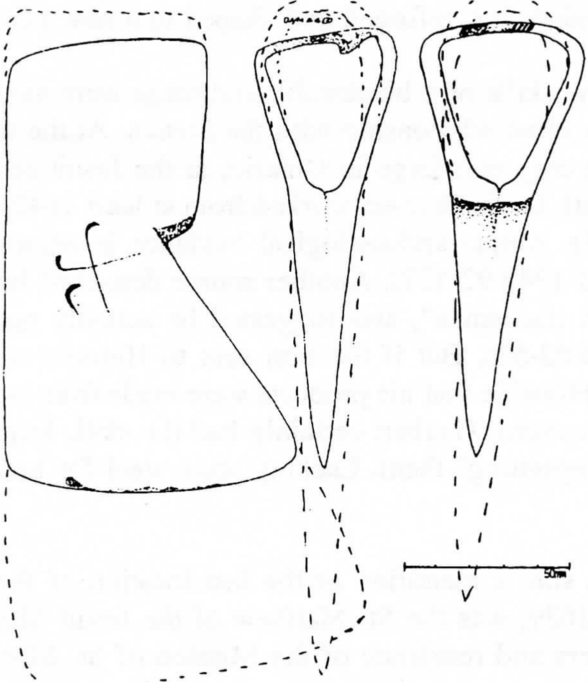

Figure 1: Distorted Iron Trade Axe With Unusual marks. Existing and possible outlines. T. Kenyon no. 88. Plater-Martin (BdHb-1) Site. Garrad Collection. Original Drawn by Thomas Kenyon.

2) possibly some visible evidence of the reworking. For example, the shape of the blade viewed from above might have a "stubby" appearance, the originally taper from the eye to the edge taking on a radical modification near the new edge. Alternatively, some evidence might be apparent that the entire blade was reforged to a new consistent taper.

Axe no. 88 (Kenyon n.d.) from the Plater-Martin 1 site (Figure 1) certainly complies with the first of these criteria. It has a distorted appearance. Its length "as-is" is 142mm and its width is 92mm, a Q/B of 0.65. On reconstructing the crushed poll the length becomes 150mm and the Q/B 0.61. Both Q/B figures demonstrate that no. 88 is an axe of abnormal dimensions.

Laying the outlines of the undamaged portion of this axe over some eighty others suggests the axe as most closely corresponding in outline to a Collingwood Museum specimen (Catalogue no. X975.974.1). This axe was used to hypothesise the possible original shape and weight of no. 88. If this method is valid, the subject axe has been shortened by as much as 60mm, and reduced in weight by nearly a third. Originally a rather large and heavy axe (although not the largest and heaviest), it could afford these reductions. Although described in this paper as a repair, it is possible that the modification of this axe was an intentional reduction in size and weight.

Considering the second criterion, that of visible evidence of change in the shape and taper of the blade, no radical deformation is visible. This presumably indicates that the entire blade, not just near the cutting edge, was reforged and shaped to a new consistent taper.

To propose that the skills of a blacksmith and forge were available to the Plater-Martin inhabitants is to suggest a close relationship with the French. At the time the site was occupied, ca. 1639-1650, there was only one forge in Ontario, at the Jesuit establishment of Ste. Marie. There the skilful blacksmith Louis Gaubert worked from at least 1642 until the Dispersal (JR 71: 142; Jones 1909:334-396). Ample archaeological evidence is reported of Gaubert's skill and versatility with iron (Kidd 1949:92-127). Another source described him as "a master craftsman, probably more artist than tradesman", and suggested he actually manufactured iron axes Ste. Marie (Jury & Jury 1954:52-53). But if the iron sent to Huronia was entirely in the form of finished goods it is more probable that his products were made from iron axes and other finished iron wares (Hunter pers. comm). Gaubert certainly had the skill, forge and equipment to repair badly damaged axes by "upsetting" them. Lacking spare steel for new inserts this was his only recourse.

The Plater-Martin site is identified as the last location of the principal Petun town of Ekarenniondi, which, in 1639, was the St. Matthew of the Jesuit Mission of the Apostles, and from 1646 the headquarters and residence of the Mission of St. Matthias to the Deer. Jean de Brebeuf, Noel Chabanel, Charles Garnier, Leonard Garreau, Adrien Greslon, Isaac Jogues and Pierre Pijart were among the Jesuit Fathers from Ste. Marie who knew the town. French soldiers and traders, native Petuns and Hurons travelled back and forth between Ekarenniondi and Ste. Marie. Trade and dynamic interaction between these two centres must have been extensive. It is not beyond expectancy that an axe repaired at Ste. Marie's forge by Louis Gaubert might be found on Plater-Martin.

The contemporary Ste. Marie I site itself produced an axe with a distorted appearance fairly similar to the subject no. 88. It appears from its photograph (Kidd 1949, Plate XLIII 'F') to have a Q/B of 0.57 or 0.59, and has a similarly crushed poll. This would also seem to be an "upset" axe, although much less so than the Plater-Martin example, and possibly adds confirmation that lacking spare steel to "new-lay" damaged axes, Louis Gaubert repaired them at Ste. Marie by "upsetting" them.

Two other features of Axe no. 88 deserve comment. Kenyon has noted that the blade edge is split. This, and the damage to the poll, is presumably the result of post-repair use. The nature of the damage indicates that the blade has no steel insert. This confirms that the axe, if repaired, was "upset" rather than "relayed".

More enigmatic are the unique impressed "walking-stick" marks. The marks on most axes appear to have been made from a die made by cutting the end of a round rod in some way. Eleven of the twelve other axes from Plater-Martin have round impressed marks, usually containing crosses. The twelfth axe is marked with stars, also presumably from a die on the end of a rod. The marks on axe no. 88 are totally unique. They appear to have been impressed with the curled end of a metal strap, held at an angle. It is as if the marks were improvised on the spot from an available piece of scrap. It seems possible that during the process of repairing the axe by reforging the blade to a new consistent taper the original impressed marks were destroyed and the unique "walking-stick" marks improvised to replace them.

The reliability of the hypothetical measurements achieved by comparison with another axe will of course always remain in doubt, and is not assisted by the failure of the resulting figures to convincingly match those offered by other researchers for the various Glass Bead Periods (GBP). The measurements proposed for the original Axe no. 88 correspond closest to the Kenyons' "Group A" axes, which are supposed to date to from GBP 1 (ca. A.D. 1580-1600), but GBP 1 sites do not exist in the Petun area and Group A axes are not found on later sites (Kenyon & Kenyon 1987: 17). In the second order of correspondence it becomes a "Group C" axe dating to GBP 2/3, using Fitzgerald's categorization (1988), or GBP 3a, using Kenyons' (1987). This would seem more likely.

In conclusion, an "upset" iron axe may presumably be recognised primarily by its distorted shortened appearance and exceptional width/length proportions, and secondarily by the apparent direct evidence of repair to the blade. This evidence might be a radical reshaping of the blade to accommodate the new location of the edge, or a retapering to the new edge by reforging. This in turn might include the loss of the original impressed marks and the substitution of others, possibly improvised. By these criteria the subject axe no. 88 appears to be a repaired "upset" axe, a tribute to the skill of Louis Gaubert. It is the only specimen of its kind recognized to date in the Petun area.

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